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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Re Appellant:) Confirmation No. 9523
Skov et al.)
Filed: October 31, 2003) Art Unit: 2614
Serial No.: 10/697,819) Examiner: Jamal, Alexander
For: SYSTEM AND APPARATUS FOR) Docket No.: 013628.00519
CONVEYING BIDIRECTIONAL DATA, POWER) (02CXT0049C)
AND TIMING SIGNALS USING A SINGLE)
TRANSFORMER)

APPEAL BRIEF

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PATENT

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In re:	Patent Application of:)	Confirmation No.: 9523
	Skov et al.)	
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Appln. No.:	10/697,819)	Examiner: Jamal, Alexander
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)	Group Art Unit: 2614
Filed:	October 31, 2003)	
)	
For:	SYSTEM AND APPARATUS FOR CONVEYING)	Attorney Docket
	BIDIRECTIONAL DATA, POWER AND)	013628.00519 (02CXT0049C)
	TIMING SIGNALS USING A SINGLE)	
	TRANSFORMER)	

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APPELLANT'S BRIEF (37 C.F.R. 41.37)

This brief is in furtherance of the Final Office Action mailed August 11, 2009.

The final page of this brief bears the practitioner's signature.

I. REAL PARTY OF INTEREST (37 C.F.R. § 41.37(c)(1))

The real party in interest in this appeal is Conexant Systems, Inc., by virtue of an Assignment from the inventors to Conexant Systems, Inc., filed with the U.S. Patent and Trademark Office on October 31, 2003 at Reel 014658, Frame 0797.

II. RELATED APPEALS AND INTERFERENCES (37 C.F.R. § 41.37(c)(2))

There are no such appeals or interferences.

III. STATUS OF CLAIMS (37 C.F.R. § 41.37(c)(3))

The status of the claims in this application are:

A. TOTAL NUMBER OF CLAIMS IN APPLICATION

Claims in the application are: 20 (Claims 1-20)

Claims currently pending in the application: 20 pending claims

B. STATUS OF ALL THE CLAIMS

1. Claims cancelled: None
2. Claims withdrawn from consideration but not cancelled: None
3. Claims pending: 1-20
4. Claims allowed: NONE.
5. Claims rejected: 1-20

C. CLAIMS ON APPEAL

The claims on appeal are: 1-20

IV. STATUS OF AMENDMENTS (37 C.F.R. § 41.37(c)(4))

The claims presently pending are those submitted with the filing of an Amendment on April 28, 2009.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER (37 C.F.R. § 41.37(c)(5))

The following summary is provided without any intention to limit the scope of the claims.

Claim 1 includes a method for conveying bidirectional data over a transformer. Modulating an alternating current signal with outbound data. By way of example and not by limitation, see 5 of Fig. 1 and the accompanying description at page 9, lines 11-12 of the specification. Driving a first side of the transformer with the modulated signal. By way of example and not by limitation, see 10 of Fig. 1 and the accompanying description at page 9, lines 12-13 of the specification. Receiving the modulated signal from a second side of the transformer. Extracting outbound data from the received modulated signal using a comparator. By way of example and not by limitation, see 20 of Fig. 1 and the accompanying description at page 9, lines 16-17 of the specification. Modulating according to inbound data the load presented to the second side of the transformer when the alternating current signal is not modulated. By way of example and not by limitation, see 30 of Fig. 2 and the accompanying description at page 9, line 29 to page 10, line 1 of the specification. Receiving inbound data by sensing said load modulation. By way of example and not by limitation, see 40 of Fig. 2 and the accompanying description at page 10, 9, lines 3-4 of the specification.

Claim 8 includes an apparatus for conveying bidirectional data across a galvanic barrier. A signal generator. By way of example and not by limitation, see 300 of Fig. 7A and the accompanying description at page 12, lines 21 to 28 of the specification. A signal modulator for modulating with outbound data a signal produced by the signal generator. By way of example and not by limitation, see 303 of Fig. 7A and the accompanying description at page 12, lines 21 to 28 of the specification. A transformer having a first side for receiving a modulated signal from the signal modulator and a second side. By way of example and not by limitation, see 350 of Fig. 7A and the accompanying description at page 12, lines 21 to 28 of the specification. A data extractor for extracting outbound data from a modulated signal received from the second side of the transformer, the data extractor further comprising a comparator. By way of example and not by limitation, see 456 of Fig. 7B and the accompanying description at page 12, lines 21 to 28 of the specification. A transformer load modulator for modulating the load on the second side of the transformer according to inbound data. By way of example and not by limitation, see

506 of Fig. 7B and the accompanying description at page 14, lines 14 to 25 of the specification. An inbound data recovery unit for determining inbound data by sensing load modulations induced by the transformer load modulator. By way of example and not by limitation, see 501 of Fig. 2 and the accompanying description at page 12, line 23 to 24 of the specification.

Claim 15 includes a system-side isolation controller. A signal generator. By way of example and not by limitation, see 300 of Fig. 7A and the accompanying description at page 12, lines 21 to 28 of the specification. A signal modulator for modulating a signal produced by the signal generator, the signal modulator comprising an exclusive OR gate and an exclusive NOR gate. By way of example and not by limitation, see 303 of Fig. 7A and the accompanying description at page 12, lines 21 to 28 of the specification. An inbound data recovery unit for determining inbound data by sensing load modulations exhibited by a transformer. By way of example and not by limitation, see 501 of Fig. 2 and the accompanying description at page 12, line 23 to 24 of the specification.

Claim 17 a line-side isolation controller. A data extractor for extracting outbound data from a modulated signal received from a second side of a transformer, the data extractor comprising a comparator. By way of example and not by limitation, see 456 of Fig. 7B and the accompanying description at page 12, lines 21 to 28 of the specification. A transformer load modulator for modulating the load presented to the second side of the transformer according to inbound data. By way of example and not by limitation, see 506 of Fig. 7B and the accompanying description at page 14, lines 14 to 25 of the specification.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL
((37 C.F.R. § 41.37(c)(6))

1. Whether claims 1-7 are properly rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.
2. Whether claims 1-20 are properly rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,351,530 to Rahamim, in view of U.S. Patent Publication No. 2004/0153543 to Thomas.
3. Whether claims 3-7, 10-14 and 18-20 are properly rejected under 35 U.S.C. 103(a) as being unpatentable over Rahamim, in view of Thomas, and further in view of U.S. Patent No. 5,056,118 to Sun.

VII. ARGUMENTS ((37 C.F.R. § 41.37 (c)(7)))

1. Claims 1-7 are improperly rejected under 35 U.S.C. 112, second paragraph, because they particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

The construction of the claims adopted by the Examiner is incorrect, and is used to improperly reject the claims. Claim construction is a question of law, and is reviewed *de novo*. *Markman v. Westview*, 52 F. 3d 967, 34 USPQ2d 1321 (Fed. Cir. 1995), *aff'd* 116 S.Ct. 1384 (1996). No deference is given to the claim constructions adopted by the Examiner, most of which are implicit and which are not explicitly set forth. Because claim construction is reviewed *de novo*, it is not necessary for the Examiner to set forth an explicit construction, and remand for that reason is therefore not required in the event that the Examiner fails to set forth an explicit claim construction. During prosecution, claim terms are to be given their broadest reasonable construction "in light of the specification as it would be interpreted by one of ordinary skill in the art." *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004). The broadest reasonable interpretation of the claims must also be consistent with the interpretation that those skilled in the art would reach. *In re Cortright*, 165 F.3d 1353, 1359 (Fed. Cir. 1999). As such, the broadest reasonable interpretation of a claim term is its ordinary meaning to one skilled in the art. The Appellants request that the Board pay careful attention to the numerous claim construction issues discussed below.

In regards to the rejection under 35 USC 112, second paragraph, the Examiner states that claim 1 recites an AC signal that is modulated, then a load is modulated when said AC signal is not modulated, and asserts that the claim makes no sense. Applicants respectfully disagree. Claim 1 includes a *method for conveying bidirectional data over a transformer* comprising the steps of *modulating an alternating current signal with outbound data*, driving a first side of the transformer with the modulated signal, receiving the modulated signal from a second side of the transformer, *extracting outbound data from the received modulated signal using a comparator*, *modulating according to inbound data the load presented to the second side of the transformer when the alternating current signal is not modulated*, and receiving inbound data by sensing said load modulation. As can be seen from the emphasized portions, modulating an alternating

current signal with outbound data occurs, then extracting outbound data from the received modulated signal using a comparator occurs, then modulating according to inbound data the load presented to the second side of the transformer when the alternating current signal is not modulated occurs. The Examiner has misstated the claim limitations in a way that makes no sense, but when the claim limitations are considered as presented, it is clear that they comply with 35 USC 112, second paragraph. The Examiner also states that it is not clear how exactly the load is modulated. The claim does not place any restrictions how the load is modulated, and it can be modulated in any suitable manner, but several exemplary embodiments are disclosed in the specification at page 10, lines 4-10. It is assumed that claims 2-7 were rejected under 35 USC second paragraph only because they depend from claim 1.

In response to these arguments, which were presented in response to the Office action mailed January 7, 2009, the Examiner states that the arguments allegedly do “nothing but repeat the claim elements and assert that they are clear.” That is clearly incorrect, as it is clear from the language above that additional explanatory materials are provided regarding the claim elements. It is difficult to understand how a rejection under 35 U.S.C. 112, second paragraph could be addressed without addressing the claim language that allegedly fails to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Furthermore, as can be clearly seen from the Summary of the Claimed Subject Matter under 37 C.F.R. § 41.37(c)(5), there is almost *ipsis verbis* support for the claim in the specification, in addition to explanatory material that accompanies that support. Accordingly, the rejection of claims 1-7 under 35 U.S.C. 112, second paragraph must be **REVERSED**.

2. The Examiner has failed to carry the statutory burden of proof of showing that Rahamim in view of Thomas provides a *prima facie* basis for the rejection of claims 1-20 under 35 U.S.C. 103(a), because the Examiner has failed to show that they disclose each element of the claimed invention.

In the final Office action mailed August 11, 2009, all of claims 1-20 were rejected 35 U.S.C. 103(a) over Rahamim in view of Thomas, but in the Office action mailed January 7, 2009, only claims 1, 2, 8, 9 and 15-17 were rejected under 35 U.S.C. 103(a) over Rahamim in view of Thomas. It is unclear from the Final Office action whether the Examiner intended to reject all claims on these grounds, because the Examiner repeated the rejection from the Office

action mailed January 7, 2009 verbatim and did not add any new grounds of rejection, so the application of Rahamim in view of Thomas to reject all claims and not just claims 1, 2, 8, 9 and 15-17 appears to be in error. Accordingly, Applicants will only address the substantive rejections of claims 1, 2, 8, 9 and 15-17, and if additional substantive grounds are provided by the Examiner in the Answer, those will be addressed as new grounds of rejection.

Claim 1 includes a method for conveying bidirectional data over a transformer comprising the steps of modulating an alternating current signal with outbound data, driving a first side of the transformer with the modulated signal, receiving the modulated signal from a second side of the transformer, extracting outbound data from the received modulated signal using a comparator, modulating according to inbound data the load presented to the second side of the transformer when the alternating current signal is not modulated, and receiving inbound data by sensing said load modulation. As discussed in the response to the Office action mailed January 7, 2009, neither Rahamin nor Thomas disclose modulating according to inbound data the load presented to the second side of the transformer when the alternating current signal is not modulated, and the Examiner fails to identify any disclosure in either Rahamin or Thomas of modulating according to inbound data the load presented to the second side of the transformer when the alternating current signal is not modulated. In addition, the Examiner has failed to comply with 37 C.F.R. 1.104(c)(2), which states that in “rejecting claims for want of novelty or for obviousness, the examiner must cite the best references at his or her command. *When a reference is complex or shows or describes inventions other than that claimed by the applicant, the particular part relied on must be designated as nearly as practicable.* The pertinence of each reference, if not apparent, must be clearly explained and each rejected claim specified.” Both Rahamin and Thomas are quite complex – Rahamin alone includes 14 Figures and 106 columns of specification. Numerous other method steps are also not disclosed in Rahamin or Thomas. Additional clarification was also requested.

While the Examiner does not provide any additional detail in the main body of the rejection in response to Applicants’ request, the Examiner does state that “modulating according to inbound data the load presented to the second side of the transformer when the alternating current signal is not modulated” is “inherent to any transformer with modulated data transmitted across.” The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d

1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) (reversed rejection because inherency was based on what would result due to optimization of conditions, not what was necessarily present in the prior art); *In re Oelrich*, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981). "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.'" *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (citations omitted). As such, the Examiner's inherency argument fails to meet these requirements, because "any transformer with modulated data transmitted across" would not necessarily meet the limitation of "modulating according to inbound data the *load* presented to the second side of the transformer when the alternating current signal is not modulated," because the *load* of *any transformer* with modulated data transmitted across is not *necessarily* modulated. A simple fixed resistance load attached to a transformer with modulated data transmitted across cannot be modulated when the alternating current signal is not modulated. The Examiner's inherent construction ignores claim limitations, which is improper. *Panduit Corp. v. Dennison Mfg. Co.*, 810 F.2d 1561, 1576 (Fed. Cir. 1987), *cert. denied*, 481 U.S. 1052 (1987) (district court improperly ignored claim limitations and distilled claims down to a one word solution to a problem). The rejection must therefore be **REVERSED**.

Claim 8 includes an apparatus for conveying bidirectional data across a galvanic barrier comprising a signal generator, a signal modulator for modulating with outbound data a signal produced by the signal generator, a transformer having a first side for receiving a modulated signal from the signal modulator and a second side, a data extractor for extracting outbound data from a modulated signal received from the second side of the transformer, the data extractor further comprising a comparator, a transformer load modulator for modulating the load on the second side of the transformer according to inbound data and an inbound data recovery unit for determining inbound data by sensing load modulations induced by the transformer load modulator. Neither Rahamin or Thomas disclose a transformer load modulator, as well as numerous other elements. Again, the lack of any identification of the particular part that is being relied on by the Examiner does not facilitate examination of the claims. In response to these arguments, which were presented in response to the January 7, 2009 Office action, no additional

clarity was provided by the Examiner.

Instead, rather than provide a citation to *something* that allegedly meets that limitation in Rahamin or Thomas, the Examiner again relies on inherency, stating at page 7 of the Office action mailed January 7, 2009 that “modulating one signal onto another will inherently modulate the load seen by the transformer because the modulated signal will create a transient value that was not there before.” However, that argument fails for a number of reasons. First and foremost, claim 8 includes “a signal modulator for modulating with outbound data a signal produced by the signal generator” and “a transformer load modulator for modulating the load on the second side of the transformer according to inbound data,” two separate elements, and the Examiner’s construction eliminates one of those two elements in its entirety, which is improper as a matter of law. *Panduit Corp.*, 810 F.2d at 1576. Second, a transformer load modulator for modulating the load on the second side of the transformer according to inbound data is not creating a transient value that was not there before, it is modulating the load on the second side of the transformer according to inbound data. The Examiner further asserts that capacitive and inductive load components will “react different to the new voltage transient added by the modulating signal,” which appears to be a reference to the affect of frequency on the impedance from the reactive components of the load. However, such a load does not change with frequency, only the impedance changes with frequency, and for a purely resistive load, there is no change with frequency, which defeats the Examiner’s inherency argument because the impedance of the load would not change for a purely resistive load such that the physical phenomenon that the Examiner relies on, in addition to being incorrect, is not even “inherent” in a resistive load. Transformer load modulator 506 is an example of a transformer load modulator for modulating the load on the second side of the transformer according to inbound data, and the fact that the claim term is used in *ipsis verbis* in the description in the specification should leave no ambiguity as to one exemplary embodiment of the claimed element. In summary, there are numerous reasons why the rejection of this element of claim 8 is wrong, whereas the Examiner’s only basis for rejecting claim 8 and thus requiring the Board’s attention is an argument based on inherency that does not even address the entire claim limitation. The rejection of claim 8 must therefore be **REVERSED**.

Claim 2 includes the method of Claim 1 wherein modulating the alternating current signal with outbound data comprises switching the phase of an alternating current signal

according to a serial bit stream coincident with a clock. The Examiner admits that neither reference discloses this limitation, but appears to rely on Official notice as a basis for rejecting claim 2, stating “it would have been obvious that any well known modulating scheme (such as frequency, amplitude or phase) could be used to perform the disclosed modulating step as a matter of design choice.” However, Official notice unsupported by documentary evidence should only be taken by the Examiner where the facts asserted to be well-known, or to be common knowledge in the art are capable of instant and unquestionable demonstration as being well-known. As noted by the court in *In re Ahlert*, 424 F.2d 1088, 1091, 165 USPQ 418, 420 (CCPA 1970), the notice of facts beyond the record which may be taken by the Examiner must be “capable of such instant and unquestionable demonstration as to defy dispute” (citing *In re Knapp Monarch Co.*, 296 F.2d 230, 132 USPQ 6 (CCPA 1961)). Furthermore, while Thomas does disclose frequency modulation, pulse-width modulation, Orthogonal Frequency Division Multiplexing (OFDM), quadrature modulation and Quadrature Amplitude Modulation (QAM), it fails to disclose that any of these forms of modulation are performed according to a serial bit stream coincident with a clock. Indeed, the term “clock” is not even used in Thomas. In response to this argument, which was presented in response to the Office action mailed January 7, 2009, the Examiner has nothing to say. The Examiner does present a confusing argument that the failure of any reference to disclose a clock somehow bears on the rejection of claim 2 under 35 U.S.C. 112, second paragraph, but that is an illogical non-sequitur. The rejection of claim 2 must therefore be **REVERSED**.

Claim 9 includes the apparatus of Claim 8 wherein the signal modulator comprises a phase modulator for altering the phase of the signal coincident with a clock. As discussed above, official notice is improper, and it is admitted by the Examiner that this element is not found in the prior art. The Examiner mischaracterizes this argument, which was presented in response to the Office action mailed January 7, 2009, as being an argument that “phase modulation is not well known in the prior art.” That is an incorrect restatement of Appellants’ argument, and reflects an incorrect understanding of the fact that it is the Examiner’s burden to demonstrate that each claim limitation is present in the prior art. The Examiner has not met that burden, and tries to instead argue that an abbreviated version of a claim limitation (e.g. “phase modulation” as opposed to “the signal modulator comprises a phase modulator for altering the phase of the signal coincident with a clock”) is prior art. Regardless of whether phase modulation is prior art,

it is incumbent upon the Examiner to show that the entire claim limitation is disclosed in the prior art, namely “the signal modulator comprises a phase modulator for altering the phase of the signal coincident with a clock,” which has not been done. The rejection of claim 9 must therefore be **REVERSED**.

Claim 15 includes a system-side isolation controller comprising a signal generator, a signal modulator for modulating a signal produced by the signal generator, the signal modulator comprising an exclusive OR gate and an exclusive NOR gate, and an inbound data recovery unit for determining inbound data by sensing load modulations exhibited by a transformer. The Examiner only addresses modulation in regards to claim 15, which is acknowledged by the Examiner not to be disclosed by the prior art, but fails to also address “sensing load modulations exhibited by a transformer.” Neither Rahamin nor Thomas disclose sensing load modulations exhibited by a transformer. Furthermore, the claim includes “the signal modulator comprising an exclusive OR gate and an exclusive NOR gate,” and the Examiner states that “any well known logic devices such as exclusive OR and NOR gates could be used as a matter of design choice in order to set the clocking rate for the modulating/demodulating processes.” However, in addition to apparently being yet another rejection based on either inherency or official notice, the claim does not state that the exclusive OR and NOR gates are used to set the clocking rate for the modulating/demodulating processes, so it is unclear what limitation the Examiner is referring to. Because the Examiner has lumped the rejection of three different claims into a single paragraph, it appears that the claim limitations of the different claims have been confused. Due to the lack of compliance with 37 C.F.R. 1.104(c)(2), it is impossible to determine what the Examiner believes satisfies the claim limitations, but at least two claim limitations are utterly missing from the cited art – one admitted by the Examiner, and a second that was not even addressed by the Examiner. These arguments were submitted in response to the Office action mailed January 7, 2009, and the Examiner admits that they are correct and relies on new art in the comments section in an attempt to present a new ground of rejection, but still refuses to impose a new ground of rejection, no doubt because that would have made the rejection mailed August 11, 2009 non-final. However, even if the Examiner does properly incorporate the cited references that are relied on by the Examiner into the rejection of claim 15, such as by improperly reopening prosecution in order to properly make the new grounds of rejection when that new grounds of rejection can and should instead be imposed in the Examiner’s Answer, that combination would

still fail to render the invention of claim 15 obvious under 35 U.S.C. 103(a). The rejection of claim 15 must therefore be **REVERSED**.

Claim 16 includes the system-side isolation controller of Claim 15 further comprising a transformer driver for driving the transformer with the modulated signal. The Examiner states that “the device inherently comprises a driver in order to drive the signals across the transformer.” However, it is unclear what “device” the Examiner is referring to – a “device” of Rahamim, a “device” of Thomas, a “device” disclosed in the application, or some other “device?” However, it is not just any “device” that must inherently include a driver, it is the system-side isolation controller of Claim 15, and it must not inherently contain just “a driver,” but rather a “transformer driver.” The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1534. As such, the Examiner’s inherency argument fails to meet these requirements, because the “device” that the Examiner is referring to is not clear, and the Examiner fails to allege that a transformer driver for driving the transformer with the modulated signal would be inherent in the unidentified “device.” The Examiner replies in response that the “device” is some imaginary device resulting from a combination of Rahamim in view of Thomas, which does not establish that the claim element is present in the prior art. The Examiner further clarifies that what the Examiner means is that the claim element is “inherent.” It appears that the Examiner is simply relying on inherency or Official notice for every single claim element, and is unable to substantiate his rejection by identifying any teaching in the prior art that corresponds to each claim element. Thus, a “transformer driver for driving the transformer with the modulated signal” is “inherent” in any transformer, a “signal modulator comprising an exclusive OR gate and an exclusive NOR gate” is “inherent” in any OR gate, etc. The rejection of claim 16 must be **REVERSED**, as with the rejection of every other claim, because the Examiner has failed to carry the statutorily-imposed duty of showing that every claim element is present in the prior art references, as alleged, much less that it would be obvious to combine them in the manner claimed.

Claim 17 includes a line-side isolation controller comprising a data extractor for extracting outbound data from a modulated signal received from a second side of a transformer, the data extractor comprising a comparator, and a transformer load modulator for modulating the load presented to the second side of the transformer according to inbound data, the Examiner

does provide at least *some* details to help decipher the grounds of rejection, citing to Fig. 1 and col. 4, lines 45-65 of Rahamin, and stating that “the line impedance (impedance presented to the transformer) may be made programmable via received data (digital values),” and that this “inherently requires a switch-able impedance element across the transformer.” However, a “switch-able impedance element across the transformer” is not what is claimed. What is claimed is a transformer load modulator for modulating the load presented to the second side of the transformer according to inbound data. Figs. 3D and 3E of Rahamin show how data is transmitted by Rahamin without a transformer load modulator for modulating the load presented to the second side of the transformer according to inbound data – by use of a separate data/control/program path that is provided and that is independent from the clock/power path, and which does not require a “switch-able impedance element across the transformer,” and which is not a transformer load modulator for modulating the load presented to the second side of the transformer according to inbound data. Instead, the inbound data is directly transmitted using a separate path. Rahamin actually has very little relevance to the claimed invention, as can be clearly seen once the specific parts of Rahamin that are being relied on are actually identified. These arguments were submitted in response to the Office action mailed January 7, 2009, and the Examiner refused to address them, necessitating yet another appeal to the Board, which is already overburdened with appeals. The rejection of claim 17 must therefore be **REVERSED**.

3. The Examiner has failed to carry the statutory burden of proof of showing that Rahamim in view of Thomas and further in view of Sun provides a *prima facie* basis for the rejection of claims 3-7, 10-14 and 18-20 under 35 U.S.C. 103(a), because the Examiner has failed to show that they disclose each element of the claimed invention.

Claim 3 includes the method of Claim 1 wherein extracting outbound data comprises extracting a clock signal from the received modulated signal and sampling the received modulated signal according to the extracted clock signal. The Examiner admits that neither Rahamin or Thomas disclose this, but asserts that it is disclosed by Sun, in Fig. 1 and the abstract. Sun discloses a digital network, and the clock and data recovery are used on the digital data being transmitted over the digital network. In contrast, claim 3 depends from claim 1, which includes a method for conveying bidirectional data over a transformer comprising the steps of: modulating an alternating current signal with outbound data. Sun does not deal with

data modulated on an alternating current signal, but rather with a digital network, where the only signals present are digital signals. As such, Sun cannot extract a clock signal from a received modulated alternating current signal and sample the received modulated alternating current signal according to the extracted clock signal. These arguments were submitted in response to the Office action mailed January 7, 2009, and the Examiner refused to address them, necessitating yet another appeal to the Board, which is already overburdened with appeals. Instead, the Examiner merely mischaracterizes Appellants' arguments. In particular, the Examiner states "per applicant's comments in the claims 3,10,18,11,19,12 rejection that the processing step of Sun does not deal with the demodulating data from an AC signal," which fails to address any of the arguments presented as to any of these six claims, and thus mischaracterizes all of them. The Examiner further states at pages 10 and 11 of the Office action mailed August 11, 2009 that "the demodulation disclosed by Rahamin and Thomas would obviously implement the clock recovery taught by Sun in order to glean the advantage of improved jitter protection." However, that is contradicted by the Examiner's own rejection of claim 3 on page 5 of that Office action, where the Examiner acknowledges that neither Rahamim or Thomas disclose extracting a clock signal from the received modulated signal and sampling the received modulated signal according to the extracted clock signal, but asserts that "Sun discloses a system to embed and recover clock signals from a data stream using a comparator (Fig. 1, Abstract). The clock signals are used to sample (recover) the data signals (Abstract)." So, again, it is unclear from either the rejection of claim 3 or the Examiner's response to Appellants' arguments how, exactly, Sun relates to the invention of claim 3 or Rahamim and Thomas. The Examiner's basis for the rejection has morphed from obvious to combine to obvious to modify, but no explanation is provided as to where, exactly, some teaching of Sun would be used to modify some teaching of Rahamim or Thomas. Where in Rahamim or Thomas does it state that clock recovery is even possible, much less that clock recovery would even aid in improved jitter protection, or that jitter protection is even needed? In any event, the Examiner has failed to meet the statutory burden imposed on the Patent Office, and the rejection of claim 3 must therefore be **REVERSED**.

Claim 10 includes the apparatus of Claim 8 wherein the data extractor comprises a clock extractor for extracting a clock from a received modulated signal and a sampling device for sampling the received modulated signal according to the extracted clock. Claim 8 includes a

signal generator and a signal modulator for modulating with outbound data a signal produced by the signal generator. As discussed above, Sun relates to a digital network, and does not include a clock extractor for extracting a clock from a received modulated signal from a signal generator and a sampling device for sampling the received modulated signal from a signal generator according to the extracted clock. The clock and data signals of Sun are the transmitted digital clock and data signals, and not signals modulated on a signal generated by a signal generator. These are the arguments submitted in response to the Office action mailed January 7, 2009, arguments which the Examiner characterizes as being “the processing step of Sun does not deal with the demodulating data from an AC signal.” That was clearly not what Appellants argued at all – it was that “the clock and data signals of Sun are the transmitted digital clock and data signals, and not signals modulated on a signal generated by a signal generator.” The Examiner again mischaracterizes Appellants’ arguments, necessitating appeal and requiring the Board’s attention. The rejection of claim 10 is improper and must therefore be **REVERSED**.

Claim 18 includes the line-side isolation controller of Claim 17 wherein the data extractor comprises a clock extractor for extracting a clock signal from a received modulated signal and a sampling device for sampling the received modulated signal according to the extracted clock signal. Again, Sun is extracting the clock signal from a digital data signal, not a modulated signal. These are the arguments submitted in response to the Office action mailed January 7, 2009, which the Examiner characterizes as “the processing step of Sun does not deal with the demodulating data from an AC signal.” That was not what Appellants argued at all – it was that “Sun is extracting the clock signal from a digital data signal, not a modulated signal.” The Examiner again mischaracterizes Appellants’ arguments, necessitating appeal and requiring the Board’s attention. The rejection of claim 18 is improper and must therefore be **REVERSED**.

Claim 4 includes the method of Claim 3 wherein extracting a clock signal comprises sensing transitions in the received modulated signal, generating an independent clock signal and synchronizing the independent clock with the transitions. Again, Sun discloses a digital network, and would be incapable of sensing transitions in a received modulated alternating current signal. An alternating current signal would destroy the digital network of Sun. The Examiner merely responds at page of the Office action mailed August 11, 2009 that demodulating “data inherently requires determining a clock to synchronize the recovered data to.” Inherency, again. Even accepting the Examiner’s excessive and almost addictive use of the inherency doctrine for

practically every single limitation, if such teaching is inherent, what need would there be to modify Rahamim or Thomas to provide the process used by Sun to determine a clock? However, what is claimed is not just determining a clock, but “sensing transitions in the received modulated signal, generating an independent clock signal and synchronizing the independent clock with the transitions.” The Examiner simply refuses to meet the burden imposed on the Examiner of examining the claims, and rejects everything as “inherent.” The rejection of claim 4 is improper and must therefore be **REVERSED**.

Claim 11 includes the apparatus of Claim 10 wherein the clock extractor comprises a controllable oscillator for generating a clock according to a control signal and the comparator is for generating the control signal by comparing transitions in a received modulated signal with transitions in the generated clock. Again, Sun, which pertains to a digital network receiving digitally-encoded data, does not process modulated signals. These are the arguments submitted in response to the Office action mailed January 7, 2009, arguments which the Examiner characterizes as “the processing step of Sun does not deal with the demodulating data from an AC signal.” That was not what Appellants argued at all – it was that Sun “pertains to a digital network receiving digitally-encoded data, [and] does not process modulated signals.” The Examiner again mischaracterizes Appellants’ arguments, necessitating appeal and requiring the Board’s attention. The rejection of claim 18 is improper and must therefore be **REVERSED**.

Claim 19 includes the line-side isolation controller of Claim 18 wherein the clock extractor comprises a controllable oscillator for generating a clock according to a control signal and the comparator is for generating the control signal by comparing transitions in a received modulated signal with transitions in the generated clock. Again, Sun, which pertains to a digital network receiving digitally-encoded data, does not process modulated signals. These are the arguments submitted in response to the Office action mailed January 7, 2009, arguments which the Examiner characterizes as “the processing step of Sun does not deal with the demodulating data from an AC signal.” That was not what Appellants argued at all – it was that Sun “pertains to a digital network receiving digitally-encoded data, [and] does not process modulated signals.” The Examiner again mischaracterizes Appellants’ arguments, necessitating appeal and requiring the Board’s attention. The rejection of claim 19 is improper and must therefore be **REVERSED**.

Claim 5 includes the method of Claim 1 wherein modulating the load presented to the second side of the transformer comprises varying the impedance presented to the transformer

according to a serial data stream coincident with an extracted clock signal. The Examiner asserts that “any electrical signal present on the inputs to the transformer (such as an incoming clocked data signal or an outgoing analog signal) will vary the impedance presented to the transformer. However, that is not the claim limitation, which is modulating the load presented to the second side of the transformer comprises varying the impedance presented to the transformer *according to* a serial data stream coincident with an extracted clock signal. The Examiner’s construction re-writes the claim to read as follows - modulating the load presented to the second side of the transformer comprises varying the impedance presented to the transformer ~~according to by providing~~ a serial data stream coincident with an extracted clock signal to the input of the transformer. The Examiner’s proposed amended claim/construction lacks support in the specification, and is therefore improper. The rejection of claim 5 is improper and must therefore be **REVERSED**.

Claim 6 includes the method of Claim 1 further comprising generating an analog signal according to the extracted outbound data signal and varying the impedance of a circuit load according to the analog signal. Again, the Examiner does not construe the claim language presented, and re-writes the claim in a manner that lacks any support in the specification. There is no disclosure in the prior art where an analog signal is generated according to the extracted outbound data signal and the impedance of a circuit load is varied according to the analog signal. The rejection of claim 6 is improper and must therefore be **REVERSED**.

Claim 7 includes the method of Claim 1 wherein modulating the load presented to the second side of the transformer comprises generating a digital value according to the voltage across a circuit load coincident with an extracted clock signal and varying the impedance presented to the second side of the transformer according to the digital value. As discussed, Rahamin discloses an entirely different manner of transmitting data/control/program signals, namely, a separate transmission path, which does not inherently require varying the impedance presented to the second side of the transformer according to the digital value. The rejection of claim 7 is improper and must therefore be **REVERSED**.

Claim 12 includes the apparatus of Claim 8 wherein the transformer load modulator comprises an impedance element, a synchronizer for synchronizing inbound data with an extracted clock signal and a switch for attaching the impedance element to the second side of the transformer according to the synchronized inbound data. None of the cited references disclose

any of these limitations, and the Examiner does not even attempt to address these limitations. These are the arguments submitted in response to the Office action mailed January 7, 2009, arguments which the Examiner characterizes as “the processing step of Sun does not deal with the demodulating data from an AC signal.” That was not what Appellants argued at all – it was that none “of the cited references disclose any of these limitations, and the Examiner does not even attempt to address these limitations.” The Examiner again mischaracterizes Appellants’ arguments, necessitating appeal and requiring the Board’s attention. The rejection of claim 18 is improper and must therefore be **REVERSED**.

Claim 13 includes the apparatus of Claim 8 further comprising a digital-to-analog converter for capable of generating an analog signal according to extracted outbound data, a line circuit load for presenting a load to a communications channel, an impedance element and an analog gate for linearly imparting the impedance element across the line circuit load according to the analog signal. The Examiner states that the “system inherently comprises A/D and D/A converters for the purpose of sending and receiving the data/power,” but this is absurd. A/D and D/A converters are not used for sending and receiving power. Furthermore, the Examiner’s construction of the claims fails to address each claim element, and no assertion is made that the “system” (whatever “system” that is) also inherently includes a line circuit load for presenting a load to a communications channel, an impedance element and an analog gate for linearly imparting the impedance element across the line circuit load according to the analog signal. Again, the failure of the Examiner to comply with 37 C.F.R. 1.104(c)(2) and the improper reliance on inherency relating only to one of a number of claim elements fails to provide a *prima facie* basis for the rejection of claim 13. The rejection of claim 13 is improper and must therefore be **REVERSED**.

Claim 14 includes the apparatus of Claim 8 further comprising a line circuit load for presenting a load to a communications channel, an analog-to-digital converter for generating a digital value according the voltage present across the line circuit load, an impedance element and a switch for attaching the impedance element to the second side of the transformer according to the digital value. The Examiner states that the “system inherently comprises A/D and D/A converters for the purpose of sending and receiving the data/power,” but as noted, this is absurd, and also fails to address each claim element. No assertion is made that the “system” (whatever “system” that is) also inherently includes a line circuit load for presenting a load to a

communications channel, an impedance element and a switch for attaching the impedance element to the second side of the transformer according to the digital value. Again, the failure of the Examiner to comply with 37 C.F.R. 1.104(c)(2) and the improper reliance on inherency relating only to one of a number of claim elements fails to provide a *prima facie* basis for the rejection of claim 14. The rejection of claim 14 is improper and must therefore be **REVERSED**.

Claim 20 includes the line-side isolation controller of Claim 17 further comprising a digital-to-analog converter for generating an analog signal according to extracted outbound data, an analog gate for linearly imparting a first impedance element across a line circuit load according to the analog signal, an analog-to-digital converter for generating a digital value according the voltage present across the line circuit load, an impedance element, and a switch for attaching a second impedance element the second side of the transformer according to the digital value. As with claims 13 and 14, the Examiner's cursory and incorrect assertion that the "system inherently comprises A/D and D/A converters for the purpose of sending and receiving the data/power" fails to address each of these elements and fails to provide a *prima facie* basis for the rejection of claim 20. The rejection of claim 20 is improper and must therefore be **REVERSED**.

VIII. APPENDIX OF CLAIMS (37 C.F.R. § 41.37(c)(8))

The text of the claims involved in the appeal are as follows:

1. A method for conveying bidirectional data over a transformer comprising the steps of:

modulating an alternating current signal with outbound data;
driving a first side of the transformer with the modulated signal;
receiving the modulated signal from a second side of the transformer;
extracting outbound data from the received modulated signal using a comparator;
modulating according to inbound data the load presented to the second side of the transformer when the alternating current signal is not modulated; and
receiving inbound data by sensing said load modulation.

2. The method of Claim 1 wherein modulating the alternating current signal with outbound data comprises switching the phase of an alternating current signal according to a serial bit stream coincident with a clock.

3. The method of Claim 1 wherein extracting outbound data comprises:
extracting a clock signal from the received modulated signal; and
sampling the received modulated signal according to the extracted clock signal.

4. The method of Claim 3 wherein extracting a clock signal comprises:
sensing transitions in the received modulated signal;
generating an independent clock signal; and
synchronizing the independent clock with the transitions.

5. The method of Claim 1 wherein modulating the load presented to the second side of the transformer comprises:

varying the impedance presented to the transformer according to a serial data stream coincident with an extracted clock signal.

6. The method of Claim 1 further comprising:
generating an analog signal according to the extracted outbound data signal; and
varying the impedance of a circuit load according to the analog signal.

7. The method of Claim 1 wherein modulating the load presented to the second side of the transformer comprises:

generating a digital value according to the voltage across a circuit load coincident with an extracted clock signal; and

varying the impedance presented to the second side of the transformer according to the digital value.

8. An apparatus for conveying bidirectional data across a galvanic barrier comprising:

a signal generator;

a signal modulator for modulating with outbound data a signal produced by the signal generator;

a transformer having a first side for receiving a modulated signal from the signal modulator and a second side;

a data extractor for extracting outbound data from a modulated signal received from the second side of the transformer, the data extractor further comprising a comparator;

a transformer load modulator for modulating the load on the second side of the transformer according to inbound data; and

an inbound data recovery unit for determining inbound data by sensing load modulations induced by the transformer load modulator.

9. The apparatus of Claim 8 wherein the signal modulator comprises a phase modulator for altering the phase of the signal coincident with a clock.

10. The apparatus of Claim 8 wherein the data extractor comprises:

a clock extractor for extracting a clock from a received modulated signal; and

a sampling device for sampling the received modulated signal according to the extracted

clock.

11. The apparatus of Claim 10 wherein the clock extractor comprises:
a controllable oscillator for generating a clock according to a control signal; and
the comparator is for generating the control signal by comparing transitions in a received modulated signal with transitions in the generated clock.

12. The apparatus of Claim 8 wherein the transformer load modulator comprises:
an impedance element;
a synchronizer for synchronizing inbound data with an extracted clock signal; and
a switch for attaching the impedance element to the second side of the transformer according to the synchronized inbound data.

13. The apparatus of Claim 8 further comprising:
a digital-to-analog converter for capable of generating an analog signal according to extracted outbound data;
a line circuit load for presenting a load to a communications channel;
an impedance element; and
an analog gate for linearly imparting the impedance element across the line circuit load according to the analog signal.

14. The apparatus of Claim 8 further comprising:
a line circuit load for presenting a load to a communications channel;
an analog-to-digital converter for generating a digital value according the voltage present across the line circuit load;
an impedance element; and
a switch for attaching the impedance element to the second side of the transformer according to the digital value.

15. A system-side isolation controller comprising:
a signal generator;

a signal modulator for modulating a signal produced by the signal generator, the signal modulator comprising an exclusive OR gate and an exclusive NOR gate; and

an inbound data recovery unit for determining inbound data by sensing load modulations exhibited by a transformer.

16. The system-side isolation controller of Claim 15 further comprising a transformer driver for driving the transformer with the modulated signal.

17. A line-side isolation controller comprising:

a data extractor for extracting outbound data from a modulated signal received from a second side of a transformer, the data extractor comprising a comparator; and

a transformer load modulator for modulating the load presented to the second side of the transformer according to inbound data.

18. The line-side isolation controller of Claim 17 wherein the data extractor comprises:

a clock extractor for extracting a clock signal from a received modulated signal; and

a sampling device for sampling the received modulated signal according to the extracted clock signal.

19. The line-side isolation controller of Claim 18 wherein the clock extractor comprises:

a controllable oscillator for generating a clock according to a control signal; and

the comparator is for generating the control signal by comparing transitions in a received modulated signal with transitions in the generated clock.

20. The line-side isolation controller of Claim 17 further comprising:

a digital-to-analog converter for generating an analog signal according to extracted outbound data;

an analog gate for linearly imparting a first impedance element across a line circuit load according to the analog signal;

an analog-to-digital converter for generating a digital value according the voltage present across the line circuit load;

an impedance element; and

a switch for attaching a second impedance element the second side of the transformer according to the digital value.

IX. EVIDENCE APPENDIX (37 C.F.R. 41.37(c)(9))

None.

X. RELATED PROCEEDINGS APPENDIX (37 C.F.R. 41.37(c)(10))

None.

If any applicable fee or refund has been overlooked, the Commissioner is hereby authorized to charge any fee or credit any refund to the Deposit Account of Jackson Walker L.L.P., No. 10-0096.

Respectfully submitted,

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